Can the future be rationally planned? And if so, how far and in what way? Here the problem is explored in terms of health education.

OUR CHANGING WORLD: COMMENTS ON PHILOSOPHY AND CONCEPTS OF PUBLIC HEALTH EDUCATION IN MEDICAL CARE

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THE word "change" means "to alter by substituting something for, or by giving up for something else; put, or take another or others in place of . . . to make different, to turn, convert."[1] This is an active process, and what is exciting today are the opportunities we have at every turn to take an active part in our changing world.

The program of the 94th Annual Meeting of the American Public Health Association was heartening because the special sessions on comprehensive care, on community health services, on the impact of legislation indicate that some major changes in our health system may be emerging. On the other hand, there is a disturbing omission—an omission that may prevent us in public health from taking that leadership role we would like to claim. I do not see the hardheaded, explicit projective thinking, in projections into the near future, so that we can effectively plan ahead. For unless we fully understand, and tackle now, the health problems of the future, we cannot take this leadership role. Rather, we will be continuously reacting and adapting to the immediate situation. If one takes a Parsonian[2] viewpoint and assumes, therefore, that the major function of the medical or health system is social control—that is, controlling the deviant, who is socially defined as sick—then this adaptive and reactive pattern of behavior makes good sense. However, we do have other ways or modes of action available to us beyond just adaptive ones.

In public health, a great deal of emphasis is given to the concept of planning. Every specialty group places emphasis on planning skills in its standards of training; program planning is one of the basic constructs of education for public health. However, planning involves projection into the future as well as analysis of what is now and, if we take this emphasis on planning seriously, we accept the challenge of determining what we believe the future should be like.

There are two postures one can take on planning. The first is to define planning as an intervention process to change current sets of behavior to new sets of behavior, in order to obtain a different set of outcomes from what would have happened if the plan had not been put into action. Emphasis here is on a desired state of the future, and this posture on planning assumes that we are capable of making decisions about desired outcomes as well as capable of setting the wheels in motion to get there.

A second posture on planning is to define it as "intelligent cooperation with the inevitable"—a posture that assumes that about all we can do is adapt and adjust gracefully to the myriad of complex interacting forces that move inexorably onward. Before bowing completely to this second posture, I would like to have a try at the first and at least test the assumption that we have the capabilities of rationally planning for the future.

One of the first steps in the planning process, no matter what expert one quotes, is that of identification of the problem around which one wishes to make plans. What is disturbing is the type of problem we are selecting for solution. We are in an unprecedented period, as far as history tells—a time of rapidly changing social, physical, and biological environment for man—yet there are very few attempts at projection to even a generation ahead—say 15-20 years. There is such a vast complexity of interacting forces that it is extremely difficult to forecast with any accuracy, but there are some things we could begin to think about at the same time that we are running to catch up with what has already happened.

This can be illustrated in more specific terms. We are in the midst of an epidemic of heart disease—we have some evidence that a better balance between our caloric intake and our exercise might reduce the risk of premature illness or death from this disease. We can reduce calories, increase exercise, or both; but we also know that, as the population increases and moves increasingly into metropolitan and urban areas, the kind of life that we lead in our society makes it almost impossible to increase exercise without making a fetish of it. So what do we do? We teach children physical fitness around the most boring sets of exercises one could devise. We think nothing of working with a community on a fluoridation project; but how much have we done to try to find socially interesting exercise patterns that would fit into the life style of the community? Last year, in a study of the nonmedical needs of patients with coronary occlusion, a major problem was found to be the lack of social and recreational outlets.[3] To build in the opportunity for exercise in community and regional planning seems to me to be a perfectly valid public health education activity. We can preach all we want, and the doctors can prescribe all they want, but until the social opportunities are made accessible, exercise as a desirable health behavior will not be performed.

To extend this idea further—I have a young friend named Mike who in just 15 years will be 21 years of age. What is Mike's world going to be like 15 years from now? What health programs can be planned now so that we can honestly say that at least some of Mike's potential health problems will have been prevented? Mike is lucky, for he has already started out with great advantages. He is a bright, happy child, with a history of longevity on both sides of his family. He has had the best of pediatric care available up to now. His mother and father are well-informed about health matters (she is a bacteriologist; he, a physiologist). Mike is growing up in a warm family, with two younger sisters. From all the things one can see, Mike has a healthy start in life—or does he? Are not his chances of accidental injury and/or death increasing? Is he learning a risky way of life in terms of his coronary arteries? Is the world that he will face in 15 years the one we are preparing him for now? Have we seriously tried to think what his life will be like and what he will need to live that kind of life to his best advantage? Can we really teach Mike what healthful living should be, when we have not really assessed what his life will be like? In assessing what

Mike's world will be like, we should take a global view.

The Immediate Future

It seems to me that there are three irreversible trends, or changes, that are of particular importance:

1. The people of this earth are increasing in numbers at an ever-expanding rate. These people need, minimally, land, food, and water to survive.

2. We have a knowledge explosion that is producing revolutionary changes in our technology, and in its demands on education, energy, and cooperative effort.

3. Along with more people and more knowledge has come an expanding awareness of inequality of opportunity, of human potential, and of our world-wide interdependence.

In turn, these forces are creating some profound social changes that are now affecting, and will affect even more in the future, the everyday lives of each of us.

Let us look, first, at these major forces and see what is happening. Barbara Ward's provocative book "Spaceship Earth" provides an image of the world that puts all these massive changes into context.

"The most rational way of considering the whole human race today is to see it as the ship's crew of a single spaceship on which all of us, with a remarkable combination of security and vulnerability, are making our pilgrimage through infinity. Our planet is not much more than the capsule within which we have to live as human beings if we are to survive the vast space voyage upon which we have been engaged for hundreds of millenia—but without yet noticing our condition. This space voyage is totally precarious. We depend upon a little envelope of soil and a rather larger envelope of atmosphere for life itself. And both can be contaminated and destroyed. . . . This is how we have to think of ourselves. We are a ship's company on a small ship. Rational behavior is the condition of survival."*

* Ward, Barbara. Spaceship Earth. New York: Columbia University Press, 1966, p. 15.

What is actually happening to this spaceship? What will it be like in less than 20 years? My information has been taken from two volumes edited by Calder, "The World in 1984,"[4] which is the report of a conference of world-wide experts held in 1964 by the "New Scientist," a British journal. These experts' predictions were based on 1964 knowledge and therefore are very conservative, for the consequences of new information and technology compound and accelerate change.

Crew of the Future: Our Population Trends

For every seven crew members on our spaceship in 1944, by 1964, there were 10 and, by 1984, there will be 16. Even with successful family planning programs, we can expect a larger and larger crew. To feed this expanding crew in 1984, we will have to increase food production from the 1964 level by 57 per cent in the world as a whole and, in the less developed areas, by 68 per cent. If we wish to minimally improve the diets of this crew, there will have to be a 275 per cent increase in food production in the less developed areas. Assuming that our technical abilities will enable us to increase production, we still have two very basic problems: (1) all these people need space, and there will be less and less land to be cultivated, and (2) because of the scarcity of land and the fact that people are also congregating in urban areas, distribution of this food becomes more and more complex, requiring more processing and giving us problems in maintaining the food's nutritive value.

In addition to food, water is necessary for life. Batisse of UNESCO estimated that we will have to at least double the domestic requirements for water by 1984. For industrial use, at least 150 per cent of current needs will be required and at least double the current

requirements for agricultural use. In the near future, the supply is not the problem, but distribution will be the problem. We are already seeing large-scale, long-term regional, interstate, intercountry, and even continental-wide planning getting under way. Water in the next few years will no longer be so freely used, and it will become increasingly costly. We may find that, within our lifetime, we ourselves will have separate distribution systems, separating our drinking water and waste disposal water. Just as milk is bought, our drinking and cooking water will probably be bought. In some parts of the United States, this has started. To increase the supply of arable land, even more water will be necessary. To maintain and develop the required food and water distribution, increasingly larger economic resources will be needed. These are not far distant problems. They are with us now. In 15 years, will we worry as much about dietary patterns, or will this be as much a matter of individual choice? My hunch is that we had better start educational programs aimed at the distribution system level. Should not these be the concerns of health education or public health?

Expanding Knowledge and Technology

The second major change is in our knowledge and technology. Perhaps the most important technical change is the development of the computer and the use of cybernetic theory—enabling us to deal in very different ways with the increasing knowledge that is becoming available. The computer and cybernetic theory can be likened to the invention of the wheel. They have created for us totally new ways of dealing with problems. An article from a series on the computer in "Fortune" magazine perhaps summarizes best what the computer has done for us:

"A man cannot instruct the computer to perform usefully until he has arduously thought through what he is up to in the first place and where he wants to go from there . . . the rethinking process gets more difficult as the computer gets better. Wherever the computer is used, it is improving enormously the quantity and quality of human cognition; and it is rapidly becoming a kind of Universal Disciplinarian."*

The computer has provided us facilities for storing and using information in very different ways. It is possible to simulate consequences of actions and policies, to ascertain consequences for future planning. The computer is used to run plants, to plan farm crop yields. to plot and plan inventory, to estimate flow of traffic, for teaching, for medical diagnostic purposes, for laboratory analysis, for record-keeping and processing, for patient surveillance, and in innumerable other ways.

Our technology has provided us with the means to communicate rapidly around the world, to phone in data from the West Coast to a computer on the East Coast and get the answer within seconds. Newsprinting and other printing is automated, and the use of space and TV enables us to see and hear an occurrence around the world at the time it is occurring. The computer enables us to have data banks; counties, states, and even the federal government are studying how to put such systems into effect. It is quite probable that all babies will be given a social security number at birth, and Mike's total record will be available on tape at the touch of a button anywhere he goes. Obviously there are some knotty problems involved in this. How do we protect privileged information? What should be considered privileged information? What is private and what is public? Can the computer help us solve our organizational problems in providing health services, or will it just compound old problems?

* Burke. Gilbert. The Boundless Age of the Computer. Fortune LXIX, 3:101-103 (Mar.), 1964.

Ideological Trends

The third major force is partly due to this expanding technology and partly due to the expanding population, but there is a growing awareness of inequality—of opportunity and of the potentialities of human beings. Margaret Mead, in a TV interview, summed up this trend when she said in response to a question about the world-wide unrest: "Until people see a glimmer of light, there is nothing to fight for." Our world is industrializing rapidly; and there is a pressing urgency of peoples everywhere demanding freedom from want, demanding human dignity and the right of self-determination. These demands create great ideological and political schisms; but if we look behind the protests, the wars, the political maneuverings of newly created states, we see a great striving and anxiety to reach new human values and to create new utopias.

These, then, are the ferments and changes that are occurring around us. And as mentioned earlier, they, in turn, are creating some profound social changes that are affecting, and will affect, our everyday lives. Several of these changes have particular implications for those in the health field.

Effects of Change

All these changes must be thought of as dynamic, of building one upon the other. No longer can we simplify our thinking to assume direct cause and effect or that one problem can be tackled and nothing else will be affected. Some of the consequences of our population, knowledge, and ideology explosions are: *organizational relationships are changing and will change quite drastically.*

Continuously, in the literature, in the newspapers, in conferences, we hear that we must find new social arrangements and organizational patterns to deal with new complexities. But we should first look at what is actually happening.

The use of the computer and cybernetics have resulted in major changes in the administrative managerial process. Complete and partial automation of industrial processes is creating the paradox of acute manpower shortages among technical specialists, professionals, and highly-skilled workers, and greater unemployment for people with out-of-date skills or minimal skills. Decision-making in the managerial process depends more and more upon coordination of technical specialty skills and knowledges. Technical decision-tools in the form of various mathematical and decision models are now available. Our strongly held beliefs about the authority of the hierarchy of position, as seen in organizational charts, is no longer functional; and we are being forced to find newer and more functional ways of structuring and organizing work. Task-force administration or problem-centered administration is taking over the old ideas of hierarchical administration. PPBS (program budgeting) and cost-effectiveness analysis are thrust upon us; systems analysis and operations research bring a new look to the study of governmental processes as well as of industrial processes. As soon as one starts to think in terms of the problem of the flow of information or people (as in systems analysis), old organizational structures have to be bypassed because they become barriers to thinking and acting. We have the opportunity today to be creative in our planning, but only in so far as we make explicit what we want the future to be like and the choices that are available to us.

Urbanization and the need to plan on a region-wide basis for environmental protection (air pollution, water pollution, for example), for transportation, for population expansion, for civil rights, and so on, mean that governmental jurisdictions, as we have known them, are no longer functional and that either their functions will have to

change or boundaries will have to change. Our generation has little or no experience in experimentation with governmental structure. The textbooks in public health administration, for many years, were written normatively, e.g., every county should have a local health department, every health department should have a board of health. These "shoulds" have put blinders on us as to other ways of accomplishing the same goals. If we stay wedded to structure, we shut ourselves off from finding alternative ways of reaching our goals.

Changing Concepts of Education

A second consequence of our population, knowledge, and ideology changes is a shift in our thinking about education. To be able to function well in this rapidly changing world, agencies, industry, medicine, and most services will need people who not only are very highly skilled but, because skills go out of date so rapidly, these people will have to be prepared with the additional qualities of: (1) mental flexibility, (2) logical thinking, (3) ability to think creatively, as well as logically, and (4) a high receptivity to new ideas. We can no longer think of education as being essentially completed by finishing a particular level of schooling. My friend Mike will not only have to have the kind of education that provides him with a technical competence, but he will also have to have an education that prepares him to continuously learn new and even different skills and technics. As health educators, should we not feel concern about his physical and psychological ability to cope with this kind of life?

As a society, we need to provide access to this continual education. We are going to have to provide new kinds of educational institutions, and the old ones need drastic revisions. The person who would like to return to school for three or six months or even a year to re-tool is not provided for in our educational system. Most continuing education is short-term or tacked on as in-service education to an agency. It seldom provides adequately for re-tooling in depth. This means a major change in our thinking about professional growth, about inservice training, and about provision of educational opportunities. In particular, it means a complete change in our society's assumptions about education. I have a 12-year-old neighbor who, when introduced to two of our doctoral students, asked, "Are you really going to school? What do you plan to be when you grow up?" In our culture, going to school means you have not yet become a productive adult.

Another force affecting our educational system is the political recognition that too much of our population is out of the economic, occupational, and social mainstream of the society and that the problem is becoming worse, not better. Operation Head Start, Upward Bound, and other poverty programs are attempts to do something about this. But these programs and the problems of offsetting de facto segregation are forcing us to shatter some of our sacred assumptions about education and how education should be organized. In a sense, we have combined problems or the solutions to problems. This need to provide equal opportunity has a positive value in itself, but it is tied closely also to the expanding problem of unemployment for those persons with a poor educational background. With the growing unemployment of those minimally educated, those semiskilled, and those in late middle age (many middle-management people in their 40's and 50's are losing high-salaried positions), we find a paradox, for we have terrible manpower shortages in the highly skilled and professional occupations. This, too, is a challenge to our educational system. Will not solutions to these educational

problems influence our health programs of the future?

Changing Work Patterns

This leads me to the third consequence of social changes that are around us. Here there is an unequally distributed and dysfunctional division of labor, and it is becoming necessary to rethink job functions, professional functions, and our patterns of work to meet these challenges. Nursing, in some ways, has been in the forefront in the health field, with the development of the LVN and the aide, but professional and specialty domains that have been carved out and often jealously guarded are in the process of change. As each of us learns new skills and takes on new functions, we have to share functions with someone else, with others who have different kinds of skills. Carefully guarded domains of influence, of necessity, are breaking down rapidly. There is a propensity in the health field to characterize and stereotype people by their profession rather than by their particular and individual mix of skills. A professional affiliation does give an anchor and support, but it also pummels us into a mold from which it becomes hard to escape. This problem of professional domains and values leads to the fourth effect of our changing world.

Necessity of Making Explicit Value Choices

Technology and expanding knowledge are creating a conscious awareness that our world is a dynamic ecosystem. We are faced with making choices—choices between the immediate and the long-range—choices about the kind of community we want, about the kind of life we want for the future. What concerns me is that the opportunity for having a dialogue about these choices is so slim. Communication media are area-wide, or politically or geographically oriented, and the public at large has little opportunity to learn much about the alternatives available and the consequences of each alternative. Adjusting to immediate political interests and group interests as we have always done in the past may set us in a different direction from that in which the majority would really like to go in the future if they had the choice. With new predictive tools of our technology, there is a new opportunity to make choices about the kind of society we want in the future. Certainly one leadership function we can perform is to consider and bring up for discussion the alternatives available to us as a society in terms of health.

Implications

This, then, is our changing world—our spaceship. We can no longer think only about our local area, or our state, or even the world. We have to begin to think as space citizens. This may seem overwhelmingly complex to us, but to my friend Mike it does not need to be. In 1984, he will be 22 years of age, starting out to make his way, making decisions as to what kind of world he wants for his children. He will have to cope with a quite different world than we know today. If we take on the responsibility for planning for his health, what do we know today that can help him meet that world of tomorrow? Even without a detailed analysis, we know that he will have to learn to cope with ambiguity better than we have. Some of the Mikes of this new world will have to learn how to use leisure time in a more creative way; others will have to learn to pace themselves under heavy pressures of work. He will probably have to be more future-oriented and more inner-directed if he is to live comfortably with crowding and complexity. He will need to think clearly, creatively, and rationally to cope with technology of the future. His stability cannot be dependent upon a traditional society or

community, but rather it will have to come from the creative potentialities of all people and upon continual learning and change. He will need the physical foundations and psychological foundations to learn this way of life. He will have to take much more responsibility for maintaining his own health, for understanding his own capabilities, and for developing a healthful life-style.

This is a pretty large order, and even if we agreed that these things were what were needed, we do not know too well how to help him become such a person.

But how do we set the wheels in motion to at least attempt to deal with Mike's world of tomorrow? One way is to begin to spell out our goals in more comprehensive, yet explicit, terms. We are coming to recognize that health per se may not have the overriding value we have given it. James put it this way:

"There is an increased willingness to consider health not as a pure and uncontestable human good but as a generally desirable element in active competition with other human needs such as economic gain, recreation, or just plain pleasurable living."*

The National Center for Health Statistics provides us with some interesting conceptual problems on the development of an index of health, indicating that perhaps the best definition of morbidity is in terms of disruption of social activities.

Today much of our health education activity is focused on rather isolated health practices—stop smoking, lose weight, get your child immunized, get your Pap smear, and so on. We talk about the need for providing comprehensive care, but we certainly do not think in comprehensive total-system terms in our own health agency activities. Medicine, because of its expanding technology, has divided the patient up into organ systems. And for all the current emphasis on the whole patient, the expanding technology and knowledge almost preclude the possibility of developing this approach to medicine, unless there are major changes in the occupational structure of the health system.

Perhaps the way in which public health and public health education can make the greatest contribution is to move out of disease system orientation and take a comprehensive approach to the social world in which Mike and his friends will be living. More attention should be focused on ability than on disability, on the definition of the "good" life than on a diseaseless one. We may not agree on what we want, but let us at least begin to define what choices we have.

Our man-made spaceships are guided to their destination by locking onto a distant target star, and then the pitch and yaw are adjusted to keep a constant fix on that distant star. The condition of our spaceship earth is becoming apparent to us. We are in the space age . . . we must learn to use space-age concepts and look for the guiding star upon which we want to fix.

* James, George. Emerging Trends in Public Health and Possible Reactions. Pub. Health Rep. 80.7:580 (July), 1965.

REFERENCES

1. Webster's Collegiate Dictionary (4th ed.). Springfield, Mass.: G. & C. Merriam, 1931, p. 168.
2. Parsons, Talcott. The Social System. Glencoe, Ill.: The Free Press, 1951.
3. Arnold, Mary F., and Hink, Douglas L. A Study of the Adjustment Techniques of Patients and Their Families to the Non-Medical Needs Resulting from Chronic Illness. (mimeo.)
4. Calder, Nigel. The World in 1984. Vols. I and II. Baltimore, Md.: Penguin Books, 1965.

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